






Slope-Intercept Form

Graphing Unit

Review...


$$m = \frac{\textit{rise}}{\textit{run}}$$


$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



We use the first equation when given a graph, the second when given two points.

Slope-Intercept Form

The slope-intercept form of a line is:

$$y = mx + b$$

m → represents the slope of the line

b → represents the point where the graph intersects the y-axis (the y-intercept)

Remember...

m is always the slope (it is how you MOVE off of the starting point)

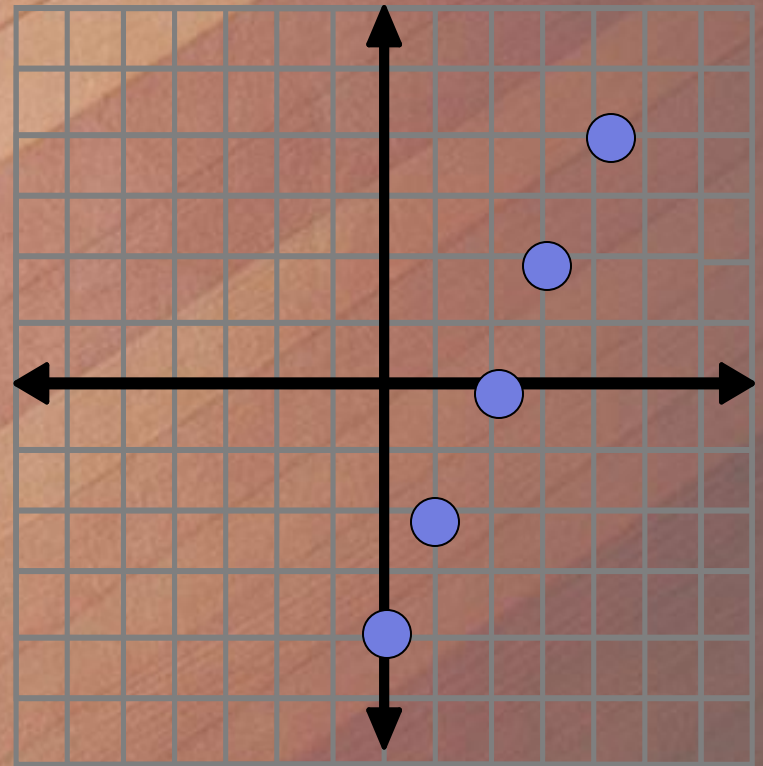
b is always the y-intercept. This is the point where the line crosses the y-axis. (Think “ b ” is the beginning point)

Identifying “m” and “b”.

Equation	m (slope)	b (y-intercept)
$y = 3x - 2$		
$y = -2x + 4$		
$y = -5x - 10$		
$y = \frac{1}{2}x - \frac{4}{5}$		
$y = -\frac{3}{4}x + 2$		
$-y = -2x - 10$		
$2x + 3y = 12$		

Graphing the line $y = 2x - 4$

- Start at the y-intercept: -4
- Slope is 2 or $\frac{2}{1}$
up 2 and right 1
- * REPEAT! 2x
- * Connect to make a straight line.



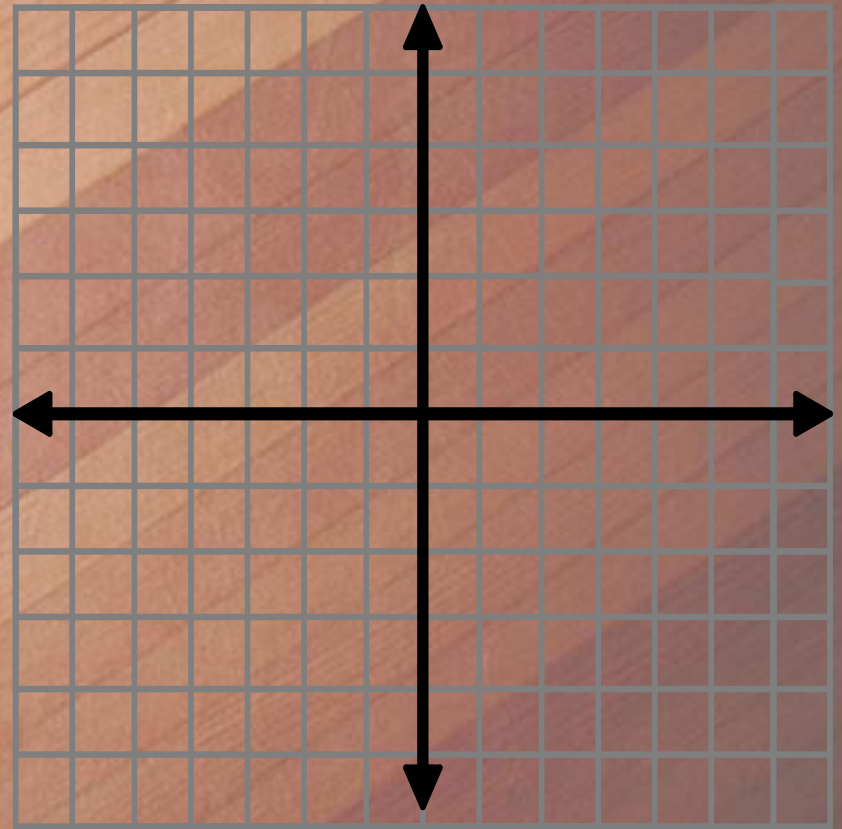
Graph the following lines.

1.) $y = 3x - 1$

2.) $y = x + 5$

3.) $y = \frac{1}{2}x + 2$

4.) $y = 6$



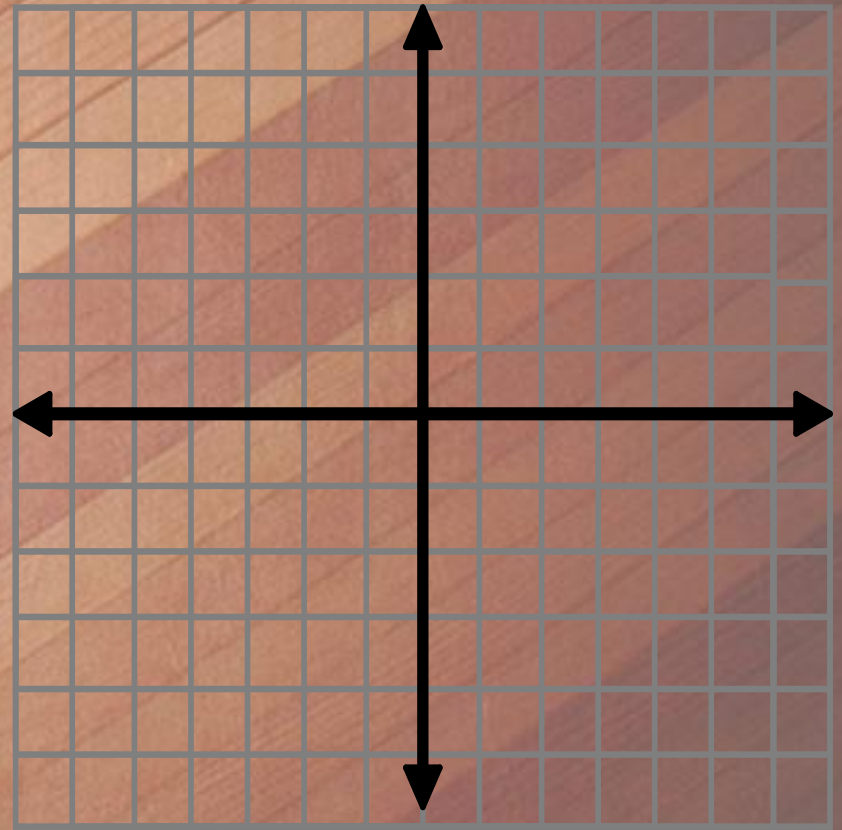
Graph the following lines.

5.) $y = -3x + 2$

6.) $y = -x - 4$

7.) $y = \frac{3}{4}x$

8.) $y = -\frac{4}{5}x - 3$



Notice...

- *If there is no “x” term, then the slope is 0.
- *Any line whose slope is 0 is HORIZONTAL.
- *If there is no “b” term, then the y-intercept is 0.
- *This line will pass through the origin (0,0).

Remember our 4 slopes:

Lines with a positive slope go “uphill”

Lines with a negative slope go “downhill”

Lines with no slope are vertical so they are undefined.

Lines with neither a positive or negative slope are horizontal so they equal zero.

Example:

Write the equation of the line with slope of 4 and y-intercept of 2.

$$m = 4 \text{ or } \frac{4}{1} \text{ and } b = 2$$

So if $y = mx + b$, then $y = 4x + 2$.

Example.

Write the equation of the line with slope of -3 and y-intercept of 9.

$$m = -3 \text{ or } \frac{-3}{1} \text{ and } b = 9$$

So if $y = mx + b$, then $y = -3x + 9$.

Write the equation of the line through (0, 2) and (3, -1).

We must first find the value of m .

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 0}{3 - 0} = \frac{-1}{3} = -\frac{1}{3}$$

- And b is the point where $x=0$, so if (0,2) is on the line, then the y-intercept is 2 so $b=2$.
- Therefore, our equation is $y = -\frac{1}{3}x + 2$

Identify the slope and y-intercept of the following lines:

- 1.) $y = 3x + 4$
- 2.) $2y = 8x - 2$
- 3.) $-y = -5x$
- 4.) $y = -x + 9$